SPECIAL REPORT Forecast 2010

COMPUTERWORLD®

JANUARY 4, 2010 VOL. 44, NO. 01 $5/COPY COMPUTERWORLD.COM

READY TO ROLL

Yes, budgets will be flat in 2010, but **savvy IT execs are betting on new projects** that have a big ROI and tap the best consumer technologies. **Report begins on page 13.**

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Inside

COMPUTERWORLD ■ JANUARY 4, 2010

■ HEADS UP

4 Data visualization can help make sense of the **ocean of data** at our disposal. | **Open-source BI** tools are gaining popularity.

6 A new way of **funding IT** would do away with detailed **charge-backs.** | Users still worry about the **security** and reliability of **cloud computing.**

8 An **increase in H-1B visas** is one of the changes proposed in a **bill before Congress.** | The **Canadian government** pledges to only buy **Energy Star** servers from now on.

■ NEWS ANALYSIS

10 Top 10 Stories of 2009. The IT industry struggled last year but still fared better than many other sectors, while Google and Microsoft unveiled long-awaited products like Chrome OS and Windows 7.

■ OPINION

40 Thornton A. May thinks many tech leaders lack a sense of where IT has been and where it's headed. He suggests three areas to focus on in 2010.

■ ALSO IN THIS ISSUE

Online Chatter	2
2010's Winners and Losers	38
Company Index	38

FORECAST 2010

READY TO ROLL

Demanding times call for agile leadership. The more than 300 IT executives who responded to our 2010 Forecast survey identified the strategies and technologies that will help them survive what promises to be another bruising year.
COVERAGE BEGINS ON PAGE 13.

16 Cheaper, Faster (and Better)

CIO strategies for getting the biggest bang for the same amount of bucks include everything from further streamlining IT infrastructure to adopting iPhones, Google Apps and netbooks.

20 The Cloud Enigma

Is cloud computing the next best thing in IT, or is it overhyped and underdelivering? IT executives on both sides of the debate explain what they like, or don't like, about the hosted technology.

23 IT's Future Lies in Sharing Resources

OPINION: Gartner's Howard Rubin envisions a time when organizations leverage global technology capacity for the "basics" of IT – everything from desktop services and e-mail to processing power and storage.

24 Bold Agendas

Despite a gloomy economic outlook, most companies aren't hesitating to invest in emerging technologies. Here's a look at the technologies organizations are testing and how IT execs are persuading other decision-makers to take the plunge.

27 The Crystal Ball

Six industry pundits put it on the line with some thought-provoking predictions for 2010.

28 Supersized Servers

Virtualization will hit a hot streak in 2010, and enterprises will order more systems fully loaded with maximum processing power, memory and I/O capabilities.

31 Six Hot Skills For 2010

A slowly reviving economy will have organizations hiring in a few key areas, looking for IT pros with a mix of skills.

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■ ONLINE CHATTER

RESPONSES TO:

Hello, Tablets. Goodbye, Netbooks!

Dec. 11, 2009

The long-term trend of "this or that is dead" articles is they're always wrong. Well, except the CueCat and HD-DVD. There's millions of consumers with different tastes, so both tablet and netbooks will survive and evolve.
■ **Submitted by:** *Anonymous*

I've got a great idea. How about a handheld tablet, with a stylus for doing the things a tablet is good for, like handwriting and drawing, without the bulkiness of a full-sized tablet? We could call it a "Palmlet" (although Microsoft would undoubtedly want to call it a "Palm PC") or something dorky like that.

I really hope someone develops this idea. I feel so good about it, I'm gonna party like its 1999.
■ **Submitted by:** *Anonymous*

It's all about the keyboard. Tablets and phones without keyboards are great if all you do is consume content. But if you want to create text, you need a keyboard.
■ **Submitted by:** *Anonymous*

Here's the thing: When I visualize myself carrying around a touchscreen tablet instead of a netbook, I see it introducing problems, not solutions, into my daily routine.

Because the netbook sits comfortably on my lap, I'm able to use it in situations that would not be friendly to a tablet. I'd like to see you try propping up a tablet on your lap and then trying to use a Bluetooth keyboard while sitting on a bench in the park or on a train, for instance.

Large touch screens are overrated for long periods of use. While the pundits have been salivating over the latest advances in touch technology, nobody's thinking about the additional physical effort it would take to use a large touch screen. Touch works naturally on a 3-inch phone display because you can cover the whole screen surface with simple wrist and finger movements.
■ **Submitted by:** *Eldon*

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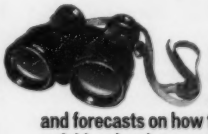


2010 Outlook

Keep up with the latest news, opinions and forecasts on how this year is likely to unfold – plus, browse a collection of stories highlighting top trends of the year gone by. computerworld.com/s/article/9141768

Retire? How About Never?

Retirement is a newly distant dream for fifty- and sixtysomething techies grappling with tanking 401(k)s, rising health care costs and a hypercompetitive job market. computerworld.com/s/article/9141820

The Long and Winding Road Of Governance Shortcuts

OPINION: When business units circumvent governance in order to fast-track projects, the result is almost always a major slowdown. computerworld.com/s/article/9142560

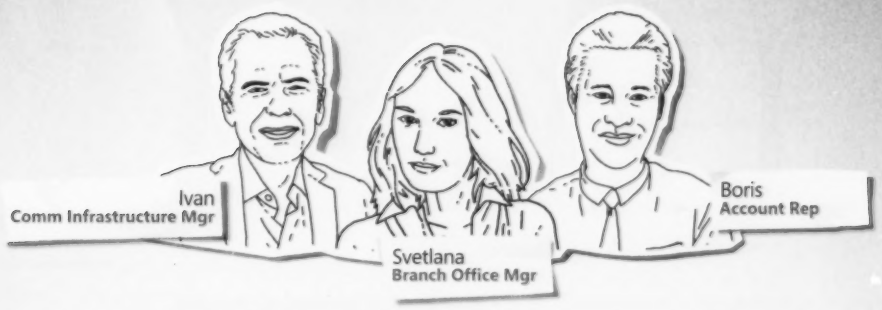
Moving a Data Center in 13 Hours

When Tasty Baking Co. moved its data center, everything went very smoothly, and a low-tech tool proved to be a surprise hit. computerworld.com/s/article/9142238

4 All-in-One PCs Sip Energy, Save Money

REVIEW: You could save up to $60 a year in energy costs using one of these machines instead of a regular desktop computer. computerworld.com/s/article/9142041

Microsoft



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HeadsUp

This image shows incidents of maritime piracy around the Gulf of Aden during a nine-year period.

THINK TANK

Exploit the Power of Data Visualization

VARIOUS PUNDITS say that one of the top goals of CEOs this year is to make sense of the terabytes of data swirling in and around their companies and then use that data to make better decisions. Key to that is data visualization technology, which tells a more powerful story than raw data alone.

In a recent blog post, consultant John Sviokla said that in his work with clients, he has seen the following benefits of superior graphic representation:

- Great visualizations are efficient — they let people look at vast quantities of data quickly.
- Visualizations can help an analyst or a group achieve more insight into the nature of a problem and discover new understanding.
- A great visualization can help create a shared view of a situation and align people on needed actions.

Bigger, high-resolution displays, cheaper mapping tools and a ready supply of internal and external data will make this easier to accomplish, wrote Sviokla, who is vice chairman of Diamond Management & Technology Consultants Inc.

"If management teams do not consciously build in great visualizations," he warned, "their organizations will waste an inordinate amount of time sifting through the river of bits, and not get the effective insights they need. Perhaps most perniciously, people will each be looking at their own part of the puzzle, never getting to the shared understanding that allows teams to take the right action in a tight time frame."

– *Mitch Betts*

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RESEARCH RECAP

Open-Source BI Going Mainstream For Routine Uses

Adoption of open-source business intelligence software is doubling every year because the products are viewed as "good enough" for routine applications, according to a recent report by Gartner Inc. analyst Andreas Bitterer.

Commercial BI software vendors still have superior BI technology, she wrote, but "open-source is slowly becoming just another sourcing option for everyday BI requirements." No longer just an option for cash-strapped organizations, open-source BI tools are going mainstream, Bitterer said.

Gartner cited five open-source BI organizations in its report: Actuate, Jaspersoft, Jedox, Pentaho and SpagoWorld.

Though the downloaded software is free, Bitterer said the cost of large-scale open-source BI deployments can still hit "the million-dollar range" thanks to high development and labor costs on top of support subscriptions.

She urged CIOs to scan their local talent markets to make sure there are developers who are skilled with open-source BI tools. Otherwise, a lack of trained developers will slow the project and increase overall costs.

Some commercial BI vendors have noticed the encroachment on their turf and are countering by offering free "starter editions" of their software, the report said.

– *MITCH BETTS*

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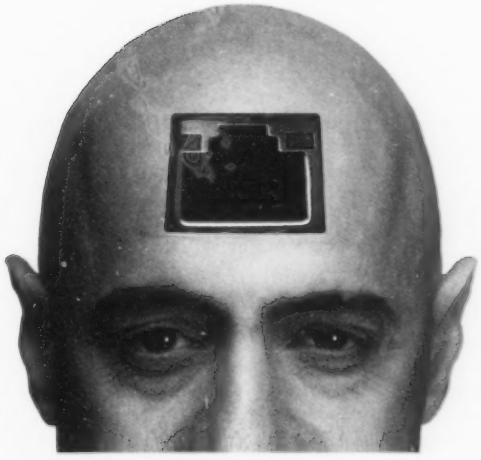

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2010 Predictions
• IT will continue to search for specific skills
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AND I'M LOOKING FOR SOMEONE WHO WILL STILL BE IN BUSINESS NEXT YEAR.
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IT LEADERSHIP

New Model Reinvents How IT Gets Funded

FIGURING OUT how much to charge business units for IT operating expenses may seem like one of the CIO's most mundane administrative tasks. But with some big changes, it could become a highly strategic function that transforms the way IT and the business work together, according to the CIO Executive Board, a unit of The Corporate Executive Board Co. in Arlington, Va.

Today, IT operating expenses are recouped from the business in one of three ways: usage-based chargeback, which requires detailed cost accounting for hundreds of line items; lump-sum payments based on the business unit's revenue or head count; or a mix of the two.

The problem is that chargeback is too granular and burdensome, while lump-sum payments fail to provide accurate signals to the business about its consumption of IT services, according to Andrew Horne, senior research director at the CIO Executive Board.

Horne said that companies need to reinvent the IT funding model by categorizing IT operations into 12 to 24 "business services" and assigning costs to each one. For example, the IT department would provide — and charge for — a menu of business services such as "mergers and acquisitions integration," "desktop support" and "producing market share reports." The services should be described in business terms, such as *videoconferencing*, rather than IT terms, like *network bandwidth*.

Why 12 to 24? The number of services must be limited to ensure a manageable level of granularity, Horne said.

Behind the scenes, this model requires something revolutionary: integrating the work of the IT shop's separate applications and infrastructure groups into combined business services. "It's a fundamental change in the IT department," said Shvetank Shah, executive director of The Corporate Executive Board's IT consulting practice.

– Mitch Betts

Micro Burst

FORECAST

The number of mobile devices capable of Internet access will top

1 billion

worldwide by 2013, IDC predicts.

SOURCES: IDG NEWS SERVICE, IDC

PROS & CONS

Cloud Still Faces User Resistance

Cloud service providers will need to address several IT management concerns – including security, reliability and vendor lock-in – before they can win more early adopters, according to Frank Gens, chief analyst at IDC.

In a late-2009 IDC survey of 263 IT and business executives, respondents cited the following concerns about cloud computing (in descending order): security; availability; performance; possibly higher costs; and a lack of interoperability standards.

Respondents said the benefits of cloud computing could include faster deployments, payments based on actual usage, and a need for fewer in-house staffers.

The IT managers polled also said they like the fact that the cloud model "encourages standard systems." That's because "one of the largest sources of IT complexity and cost is the huge sprawl of distinct, yet functionally redundant, systems and applications in most organizations," Gens said. In contrast, he noted, cloud computing is built on standard, shared systems.

– MITCH BETTS

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WASHINGTON WATCH

House Immigration Bill Would Overhaul H-1B Visa Program

NEARLY 90 MEMBERS of the U.S. House of Representatives are co-sponsoring an immigration reform bill that would make broad changes to the H-1B visa program.

The proposed legislation would create a federal agency to review U.S. employment needs, create a new type of visa for founders of start-up companies and increase the supply of H-1B visas. But despite a long list of co-sponsors, the bill is far from passage.

The technology industry has tried in recent years to get Congress to expand the annual pool of H-1B visas beyond the current cap of 65,000, but the effort has been stymied by proponents of comprehensive immigration reform who don't want to lose votes for a broader bill.

Whether this 700-page bill will get the support of either the tech industry or H-1B critics is unclear. Both sides may find things to love and hate in its basket of provisions.

One clause that may win tech industry support calls for the release of all the H-1B visas that went unused from 1992 to 2008 — a total of about 309,000, according to a source who has seen some details of the bill.

But this House bill, dubbed the Comprehensive Immigration Reform for America's Security and Prosperity Act, also incorporates parts of other bills that impose restrictions on H-1B use and call for tougher enforcement.

The proposal would create a new, independent federal agency, to be called the Commission on Immigration and Labor Markets, that would establish "employment-based immigration policies that promote economic growth and competitiveness while minimizing job displacement, wage depression and unauthorized employment."

In particular, the new agency would make recommendations to Congress about caps for H-1Bs and other types of visas.

A competing immigration bill is expected from Sen. Charles Schumer (D-N.Y.), who chairs the Senate Subcommittee on Immigration, Refugees and Border Security.

Schumer, a longtime supporter of the H-1B program, is expected to introduce his bill in the spring.

– Patrick Thibodeau

GREEN IT

The Canadian government has pledged to only buy servers that are certified under the U.S. Environmental Protection Agency's Energy Star program, according to Lydia Aouani, a manager in the Office of Energy Efficiency at Natural Resources Canada. "It's important because the [Canadian] federal government is a huge purchasing power," Aouani said at a recent data center conference in Toronto. "Soon, any server purchased by our government will be Energy Star [certified]." Canada has set ambitious goals for reducing greenhouse gas emissions and expects green data centers to be part of the solution.

SOURCE: DATACENTERDYNAMICS INC., SAN FRANCISCO

SECURITY MONITOR

TSA Gaffe Shows Pitfalls Of Redaction

The inadvertent exposure of a sensitive Transportation Security Administration manual last month serves as a sobering reminder about the pitfalls of trying to redact, or hide, electronic text.

The lapse occurred when a contract employee posted the improperly redacted security manual – which described TSA airport screening methods that are designed to thwart terrorists – on a public Web site for federal procurements.

Other organizations, such as HSBC Bank and Facebook Inc., have also had embarrassing incidents in which text in electronic documents that they thought was unreadable was revealed.

Such lapses often result from a simple misunderstanding of how electronic redaction works, said Barry Murphy, an analyst at Murphy Insights, a Boston-based consultancy specializing in e-discovery and records management.

"Obscuring portions of text in a word processor by placing black boxes over it, for instance, does nothing to redact it," Murphy said. The text may not be viewable, but it still can be indexed, making it very searchable and easily retrieved by copying and pasting the blacked-out portion to another document, he said.

Another common mistake is to overlook the metadata and revision histories

that are often automatically embedded in Microsoft Word documents and PDF files, Murphy noted. Blacking out or deleting the text doesn't get rid of this metadata. The only way to ensure that sensitive data isn't simply visually hidden is to remove it using redaction tools, he explained.

In a 2005 document Merck & Co. sent to a publisher, the drug giant deleted information linking its drug Vioxx to an increased risk of heart disease. But the deleted information was included in the document's metadata and was later recovered.

"The major, major thing is: Do not use your word processing programs for redaction," said John Pescatore, a Gartner Inc. analyst. There are "very strong, usable software tools that can be used for electronic redaction," he added.

Examples of automated redaction tools include Redact-IT from Informative Graphics Corp., RapidRedact from Onstream Systems Ltd. and ID Shield from Extract Systems Inc.

– JAIKUMAR VIJAYAN

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TOP 10 STORIES OF 2009

Acquisitions still reshape the market; cutting-edge products like Chrome OS and Windows 7 emerge.

By Marc Ferranti

THE GREAT RECESSION cast a shadow on all sectors of the economy in 2009, but the IT industry fared a bit better than most as the slump failed to curb the dynamic nature of the tech business.

Acquisitions among major vendors continued to reshape the market, operating system wars were extended to Web and mobile battlefields, microblogging became a powerful source of real-time information, and interest in small, Net-connected devices was stronger than ever.

Here, in no particular order, are the IDG News Service's picks for the top 10 technology stories of 2009.

■ **Oracle (tries) to buy Sun.** In April, Oracle agreed to buy Sun Microsystems for $7.4 billion — a deal that could alter the high-tech landscape. However, the European Union is threatening to block the transaction because Sun owns the open-source MySQL database.

■ **Microsoft launches Windows 7.** A scaled-back launch on Oct. 22 and a marketing mantra of "simplicity" fit Microsoft's characterization of the new operating system — faster and more straightforward than its predecessor, Vista. The much-maligned Vista was plagued by hardware compatibility problems, poor performance and annoying system alerts. The older Windows XP, as of the Windows 7 launch, was still being used by more than 70% of computer users.

■ **Google unveils Chrome OS.** A month after the Windows 7 launch, Microsoft's arch nemesis released its new Google Chrome operating system to the open-source community. Chrome is built to run only Web-based applications; it's not meant to replace current PC operating systems.

■ **Yahoo, Microsoft sign search deal.** After failing to reach a merger agreement, Microsoft and Yahoo struck a revenue-sharing deal that calls for Microsoft's Bing to power Yahoo's search sites and for Yahoo to sell premium search advertising services for both companies. The agreement still needs regulatory approval.

■ **Obama includes tech in stimulus plans.** President Barack Obama's stimulus plan, approved by Congress in February, included $7.2 billion for broadband deployments, $17 billion for incentives to adopt electronic health records and $11 billion to hook up the electricity grid to the Internet.

■ **Steve Jobs comes back, again.** Apple's comeback kid did it again — but this time, Steve Jobs overcame serious health problems. He returned to work in June after taking a leave of absence to receive a liver transplant; he had undergone treatment for pancreatic cancer in 2004.

■ **Microblogging business explodes.** Oprah Winfrey and other celebrities jumped on the Twitter bandwagon to solidify the status of microblogging and social networking technologies. The U.S. government even urged Twitter to delay a planned service outage so that tweets could continue to flow from protesters challenging the results of the Iranian election.

■ **E.C. fines Intel for antitrust violations.** The European Commission fined Intel $1.44 billion in May, citing damage to competition as a result of discounts the chip maker gave to partners. In the U.S., the Federal Trade Commission filed its own antitrust lawsuit against Intel last month.

■ **Droid escalates smartphone battle.** Verizon Wireless launched Droid, a half-inch-thick contender for the smartphone crown, in October. Sporting a 3.7-in. touch screen, a metal top and a sliding keyboard, the device is the first serious challenger to Apple's iPhone and Research In Motion's BlackBerry.

■ **IT forecast: Clearing, with a chance of sun.** The recession hit every business sector, but tech occupies a special place in the recovery. Last month, IDC echoed other market research firms when it declared that IT will lead the world out of the bad economic times. The researcher projects that global IT spending will increase 3.2% this year and return to 2008's pre-recession spending level of about $1.5 trillion. ■

Marc Ferranti *is executive news editor of the IDG News Service.*

Smarter technology for a Smarter Planet:

Building a fluid enterprise.

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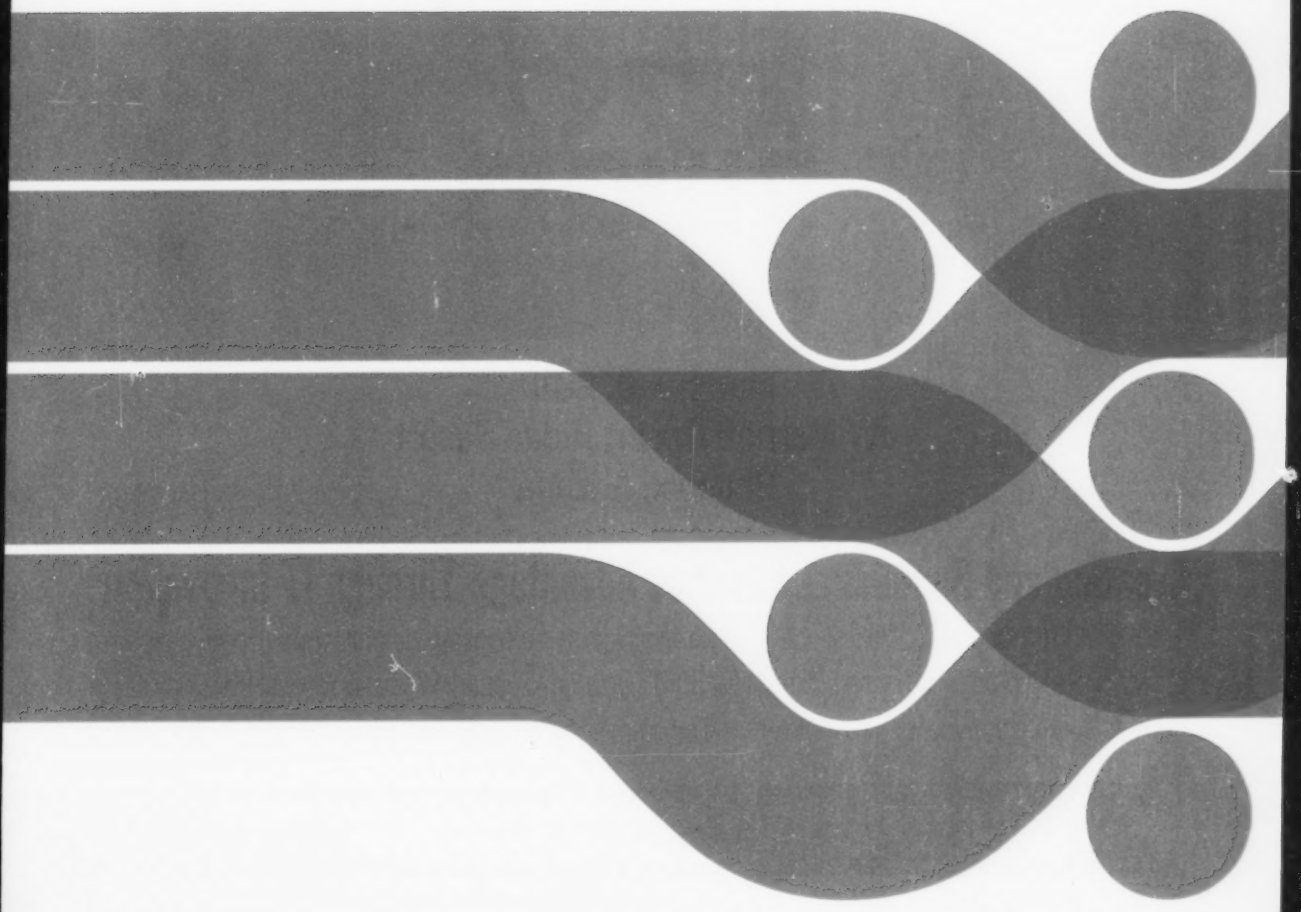

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READY TO ROLL

IT will play for keeps in 2010, as cash-strapped tech executives bet on server virtualization, cloud computing and other bottom-line-boosting projects.

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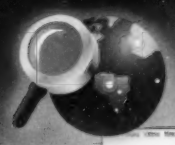

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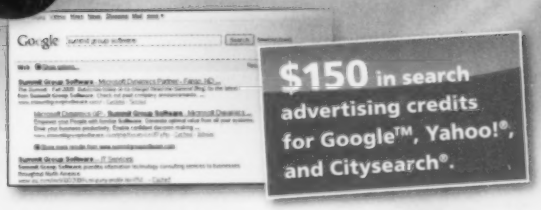

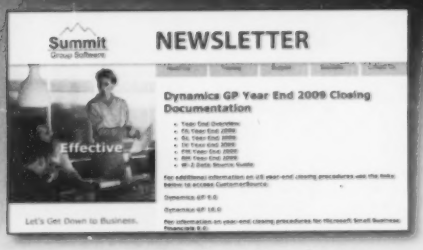

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CHEAPER, FASTER (AND BETTER)

IT budgets aren't budging, so IT execs will squeeze value from projects that deliver quick ROI and long-term savings.

BY JULIA KING

FOLLOW the IT money in 2010, and it will lead to yet more projects designed to cut the cost of doing business. You'll also find a slew of smaller-scale initiatives that have a relatively quick payback or are laser-focused on a wider enterprise business goal, such as improving customer service or product quality. Moreover, an increasing portion of what are shaping up to be relatively flat IT budgets at most companies will be devoted to streamlining and offloading rather than bulking up internal IT infrastructure.

At $3.5 billion Sunoco Inc., for example, CIO Peter Whatnell explains that he is in the process of evaluating Google Apps and other so-called cloud offerings in conjunction with an over-

"In down times, everything you do has to contribute to the business."

BOB KEEFE, CIO, MUELLER WATER PRODUCTS

"Commoditization is driving better technology into smaller, cheaper devices. I see a real [support] benefit in that."

JEFFREY GREENAWAY, CIO, BARGREEN ELLINGSON

all desktop virtualization initiative.

"Our immediate goal is to reduce internal costs," says Whatnell. "Sunoco has 8,500 users, but 50% to 60% of them only need access to two or three office productivity applications. We're looking to see if there's a way to provide those without the support costs associated with Wintel on their desktops."

As part of the same cost-cutting initiative, Sunoco plans to move several hundred users to thin clients on the desktop, which will be connected to "everything virtualized on the back end," Whatnell says.

"If there's a problem, we have UPS deliver a cardboard box with a new [thin-client] device," he explains. "The user plugs it in and gets access to back-end applications. The mailroom becomes our desktop technician. It's the long-term ownership costs we're looking to take out."

IT executives are feeling the squeeze. A little less than one-third of the 312 respondents to *Computerworld*'s 2010 Forecast survey said they expected their organizations' IT budgets to kick up in the new year. Most are dealing with flat budgets. And 37% said budget constraints and economic pressures are the No. 1 management challenges they will face in the next 12 months. Therefore, removing long-term IT costs is the main goal and will remain so throughout 2010, CIOs say. The key rationale for technology investments will be to save even more money down the road.

SHARP EYE ON THE FUTURE

Bargreen Ellingson Inc., a restaurant supply and design company in Fife, Wash., is in the midst of a $5 million, multiyear ERP implementation project that it started in February 2008 — smack dab in the middle of the recession. This year, with the foundational elements of the ERP system in place, the company will begin leveraging the system's business analytics capabilities. Also high on the IT agenda is collaborating with the business to streamline various processes, such as managing inventory, to take full advantage of the new IT capabilities.

"A couple of years ago, we knew the current economy was on the horizon and that we were headed into a recession," says Bargreen CIO Jeffrey Green-

CRIMPED CASH FLOW

Nearly half of all respondents said their organizations' IT budgets won't change in the next 12 months.

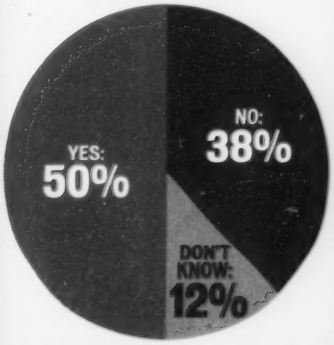
THE BIG SQUEEZE

TOP 5 management challenges in the next 12 months:

1	Budget constraints/ economic pressures
2	Managing projects
3	Managing expectations/ business alignment
4	Managing personnel
5	Security

ONWARD AND UPWARD

Is your organization planning any major upgrades or purchases in the next 12 months?



SOURCE: EXCLUSIVE *COMPUTERWORLD* SURVEY OF 312 IT PROFESSIONALS, SEPTEMBER 2009

away. "We purposely decided to take on a new ERP system because we wouldn't be going at 110% and we could bring in the necessary business people who can't afford to dedicate themselves to this kind of project during busy times." In 2010, he says, it's all about taking out costs by finding and implementing ways to make the business more efficient.

In 2010 and for the foreseeable future, getting things done faster, better and cheaper will involve more and more consumerlike technologies, including cloud-based IT infrastructure capabilities, SaaS applications, netbooks and iPhones, CIOs say. The reasons are simple: They work, they're less of a support hassle, and yes, they're cheaper. In fact, more than half the respondents to *Computerworld*'s survey said they're likely to look to cheaper technologies and homegrown applications to save money this year.

"We now consciously consider [application service providers] or other cloud solutions as valid competitors to hosting our own solutions when we need an application, because of the reduced cost," says Eric Cowperthwaite, chief information security officer at Providence Health & Services, a system of hospitals and clinics based in Seattle. Cowperthwaite predicts that 2010 will bring "a significant rethinking of Providence's end-user desktop environment. IT will be looking to answer questions such as, 'So we really need $700 or $800 worth of software on every computer?' " he says.

Greenaway says he will be integrating several consumer devices into Bargreen Ellingson's IT infrastructure.

"Commoditization is driving better technology into smaller, cheaper devices. I see a real [support] benefit in that," he says. "For years, IT has been conditioned to accept a high level of fixing things as a requirement — more so than any consumer would tolerate. Now, when folks come in and want to connect their iPhones into the corporate infrastructure, I'm much more likely to do it because I'm not going to have the same level of Tier 1 help desk support issues with it."

FEELING FRUGAL

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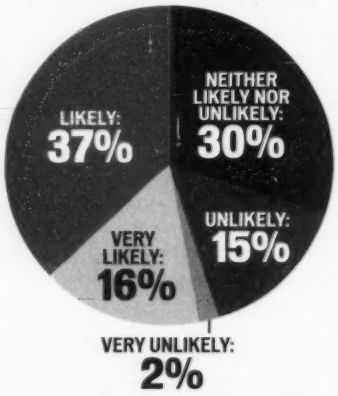

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PRESSURE ON THE BIG GUYS

Mike Twohig, CIO at Clean Harbors Environmental Services Inc. in Norwell, Mass., has deployed some cloud applications and open-source software as a means of keeping a lid on costs in his nearly 100% homegrown IT environment. He also consciously seeks out up-and-coming vendors to supply his enterprise with hardware and software. The strategy pays off in two ways: He saves money because the lesser-known vendors' products are less expensive, and that makes the big guys, such as Microsoft and Oracle, far more responsive about renegotiating licensing contracts.

For example, Clean Harbors has deployed server virtualization software from Addison, Texas-based 2X Software LLC that Twohig says costs "15 cents on the dollar [compared] to Citrix and has all of the same functionality."

He has also deployed an inventory application from a less well-known vendor. "The reality is that for the investment in time and dollars, I became a bigger fish in the pond to the [smaller] vendor. I use that to drive down costs," he says.

Next year, Twohig will continue to play by this strategy as Clean Harbors strives to make more of its applications accessible to mobile users in the field. "We will have a big push on mobility and productivity to the workforce," he says. The goal, he adds, is "to touch data once," similar to the way car rental companies are able to process transactions and issue customer receipts via mobile units operated by employees roaming remote parking lots.

The bottom line, IT executives say, is that 2010 will be a flat budget year in which they continue with projects that already have demonstrated at least some payback. Sunoco, for example will use in-place business intelligence and analytics tools to dive even deeper into data. And Mueller Water Products in Atlanta will continue to consolidate and streamline its IT infrastructure so it's easier for customers to do business with the company.

"In down times," says Mueller CIO Bob Keefe, "everything you do has to contribute to the business."

That's true, acknowledges Forrester Research Inc. analyst Andy Bartels, but he says he wouldn't be at all surprised to see IT budgets revised upward as the year progresses.

"CIOs' forecasts are a lagging indicator, not a leading indicator," Bartels says. "CIOs are looking back and planning conservative budgets against the worst economy rather than against an improving economy. It's a prudent course to be risk-averse, but in terms of interpreting the course of things to come, you need to take it with about six grains of salt." Forrester, for one, is expecting 7% to 8% growth in the overall tech market in 2010.

"The assumption that 2010 is going to be no better than 2009 is not correct," Bartels says. "While we're not looking at a boom economy, we are looking at a strong economy, and we'll start to see growth." ■

"It's the long-term ownership costs we're looking to take out. The whole area of provisioning for end users is the target of our cost reductions. PETER WHATNELL, CIO, SUNOCO INC.

ACING THE IT BUDGET

There are exceptions to every rule, and in 2010, U.S. Tennis Association CIO Larry Bonfante is truly unique.

In a year of largely flat IT budgets, Bonfante has a capital expense budget of $5.2 million. That's in addition to his 2010 IT operating budget of just over $7 million. The largesse comes after cutting costs by 18% in 2009, a year in which the USTA also cut its IT staff by 24%.

Other significant savings came from renegotiating contracts with various SaaS providers and moving all of the USTA's back-end systems to Amazon.com's IT cloud infrastructure. "We cut costs to one-fourth of what they were using a hosted provider," says Bonfante. Now, the USTA is looking to invest for the future.

"We sharpened our own pencils so no one had to come to us this year and ask for deeper cuts or cost reductions," Bonfante says. "We lower costs all the time, so we're not being asked to lower more."

Instead, the 700,000-member White Plains, N.Y.-based USTA is investing in a new digital asset management system so that its 19,000 hours of historical tennis film footage will be easier to access, market and sell.

"We want to digitize this film, then repurpose it to generate revenue," Bonfante explains. Among other things, "we can sell it to coaches, and make and sell DVDs," he says.

The USTA does all of its own film editing in-house and will use part of its IT capital expense budget to build a second video suite at its headquarters. The association is also outfitting media cubicles at its National Tennis Center in Queens, N.Y., with IP television so reporters and writers covering matches can get live feeds from multiple courts.

Looking ahead, "mobile is going to be a big part of what we do in 2010," Bonfante adds, noting that the plan is to mobilize all transactions that take place over TennisLink, the USTA's membership e-commerce system. Coaches, players and other members use the system to register for tournaments, check rankings, or find and join a league.

"We're also using Twitter, Facebook and other social media to reach out to younger people and get them involved in tennis earlier," says Bonfante. "If there's a significant business ROI, we're still making investments."

– JULIA KING

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FORECAST 2010

THE CLOUD ENIGMA

Is cloud computing the next best thing in IT, or is it overhyped and underdelivering? Here's what both sides of the cloud debate have to say.

BY STACY COLLETT

It seems that IT leaders are warming up to cloud computing, with its promise of elasticity, utility-based billing, multiple storage locations, and the ability to pull data directly from storage devices. In fact, cloud computing ranked second (behind virtualization) as the technology most beta-tested in 2009, according to *Computerworld*'s 2010 Forecast survey of more than 300 IT executives.

But does that mean cloud computing is destined for success? Not so fast, said nearly half of the IT executives polled. They said they are unlikely to try cloud computing this year and ranked it as the No. 1 overhyped and underdelivering technology. What's behind this love-hate relationship? We asked people on both sides of the debate.

Puffing Up the Cloud

FOR EVERY naysayer, there's another user who can't get enough of cloud computing's benefits.

Cloud initiatives are high on Jessica Carroll's priority list for 2010 at the United States Golf Association. Last year, the Far Hills, N.J.-based USGA signed on with IBM for cloud-based disaster recovery and e-mail continuity services, with great success.

"We're able to do online backups nightly into the cloud for our mission-critical data," says Carroll, who is the USGA's managing director for information technologies. "But we were looking for that extra added safety net completely off-site — at a different location, outside of our environment — where if we have a disaster, we can go someplace, set up and get our data back."

But the cloud feature that does the most to help Carroll sleep at night is the e-mail continuity component. "E-mail is probably the lifeblood of what we do. Communication and outreach is who we are. If we don't have e-mail, it's a real kink in our business day," she says. "With cloud backup, if we have a situation where our internal systems go down, we can, through the Internet, flip over to our Web-based e-mail system via IBM, using our own e-mail addresses, and the staff barely would even know what happened."

Now Carroll is eager to take cloud computing to the next level. She'd like to reduce the number of servers in the USGA's data center — it currently has 70 — and try out cloud-based testing and development.

This year, she will be looking at deploying cloud-based test environments that the USGA would pay a monthly fee to use. "[The providers] are responsible for setting up your environment to your specifications. Can they do that in a fast-

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She cautions would-be cloud users to study all contracts and scrutinize the hosting vendor's environment and operating procedures. What is its security policy? What is its disaster recovery plan? Is it willing to share that information with you and put it in a contract?

"This is where I've seen the enterprise-class vendors emerge real strong because they can give you that information and have strong policies and practices they can share with you," Carroll says. "When you are signing with a hosting vendor that is pay-by-month that you found on the Internet — are you going to be able to get that kind of detail? From what I've experienced so far, that answer is no, and for me that's a red flag."

DANIEL CHAN says cloud computing could make his state agency more efficient.

SPEEDY SOLUTION

The New York State Office of Temporary and Disability Assistance is hoping that cloud computing will help it handle the 30% jump in demand for its services over the past year as a result of record job losses in the state.

"Our data center is running out of capacity," says CIO Daniel Chan, "and we don't really have enough staff to do the work that we need to get done. So the idea is, can we do something creatively to outsource some of these computing needs?" Chan says he would like to use the cloud for application and development testing first, and then possibly offer Web-based applications to users.

The state agency's current technology is at least one generation behind, Chan says, because the need to comply with government policies on security and other matters leads to delays in deployments. What's more, IT costs are higher than they should be because by the time purchases are approved, the technology is dated, but the state is still paying what it cost when it was new.

If the agency did testing in the cloud, Chan says, it could get systems up and running faster because it would be able to quickly set up multiple test environments, allowing many employees to test concurrently — on more current equipment that would be less costly because it wouldn't have the bells and whistles of a production environment. "We don't need that same level of robustness" as in a production environment, Chan says. Right now, "in most cases, we pay for the functionality we really don't need for test and development," he explains.

NICK GARBIDAKIS is moving American Bible Society systems to the cloud gradually.

With cloud computing, the agency can stay up to date technologically, Chan says. He plans to launch the agency's first cloud project in the second half of this year. "If we can demonstrate that we're saving the taxpayers money, I'm sure we can get the procurement agency on board," he says. "From a business perspective, it's a very compelling story."

The American Bible Society uses Amazon.com Inc.'s cloud services for 80GB to 100GB of Web files, but that's just the beginning, says CIO and Chief Technology Officer Nick Garbidakis. The Manhattan-based organization plans to use cloud services for some disaster recovery and storage, but Garbidakis says he will move more data to the cloud when servers or equipment needs to be replaced, and he will push out more when bandwidth becomes more affordable for the nonprofit group.

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Garbidakis says he expects to move nontransactional systems to the cloud within a year and more heavy-duty applications to the cloud in five years — "if hardware, software and management costs go down."

Gene Ruth, a storage analyst at Burton Group in Midvale, Utah, says his firm's big clients are interested in cloud computing, but they aren't moving production environments there yet. "I've heard plenty of people try to pick and choose what might be an interesting application for cloud storage," such as archiving or creating access points for contractors in development teams who don't need to use data inside firewalls, he says. "It's an emerging market," Ruth says. "It's not a done deal by a long shot."

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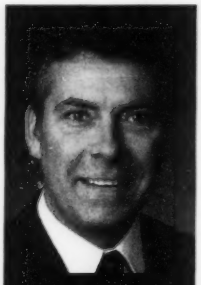
Bursting The Bubble

INFORMATION TECHNOLOGY leaders who want to burst the cloud bubble offer arguments like these: Applications for their industries don't yet exist, they can't justify the cost, or cloud computing just isn't ready for enterprise use.

"Cloud computing is a solution looking for a problem. I don't need it right now," says Clarence White, CIO at the Western U.S. branch of The Salvation Army in Long Beach, Calif. One of the largest nonprofit organizations in the world, The Salvation Army has more than 100TB of active data, and its servers process tens of millions of transactions annually. White says he prefers to maintain tight control of his data and likes to have the ability to cross-reference information from different applications. "I haven't yet seen a cloud model that would facilitate my ability to quickly mine my data for business intelligence," he says. "I could be completely wrong, but I haven't seen it."



says cloud computing is too risky for HomeTown Bank.

He also says that cloud computing's other potential uses — as a means of providing scalable storage, safer disaster recovery or more easily deployed test environments — have already been addressed in today's data centers with virtualization technology and storage-area networks.

White says he might consider cloud computing "when applications for my industry type are more mature and when the plumbing is mature enough that it feels as if I have local access to my data."

"I think it's overhyped," says Melvin Evans, IT director at Hand Arendall LLC, a Mobile, Ala.-based law firm. "It still sounds better on paper than it does in the real world."

He and his firm's business leaders grew skeptical about the cloud after the much publicized outages suffered by Google Inc. and other providers of hosted IT services in 2009. What's more, the law firm sees legal holes in many vendors' service-level agreements. "The vendors out there tout 95% to 99.9% uptime, but the way it's worded, there is no way you're going to get credit or reimbursement for a small amount of downtime," Evans says. "When the guarantee is worded with so many loopholes, I'll never be able to see that guarantee enforced."

law firm sees loopholes in cloud vendors' SLAs.

Mike Wright says that in the heavily regulated financial services industry, strict mitigation requirements make cloud computing unappealing to small and midsize banks like the one he works for.

Beyond, say, a document-imaging application, "I can't think of any application that would benefit us for this type of a medium-size business," says Wright, vice president and IT director at HomeTown Bank, a community bank based in Roanoke, Va. "There are certain things that we could virtualize, but we would have to have control over and ownership of the hardware. It circles back around to risk mitigation."

Cloud computing may seem overhyped because so many marketers are jumping on the bandwagon. "To make it seem bigger than it is, many people are including everything they can in [the term] *cloud*," says Michael Peterson, president of Strategic Research Corp., an IT research and consulting firm in Santa Barbara, Calif. He says he thinks of true cloud computing functions as pre-existing grid-style compute-and-storage services, tightly coupled remote compute-and-storage services that are remote but look local, and hosted computing services.

Functions that shouldn't be considered cloud computing, says Peterson, include remote delivery of everyday data center services such as replication and disaster recovery, routine Web 2.0 services, application service providers' offerings and social networking.

Deciphering the meaning of the term *cloud* would help the industry "get a handle on adoption," he adds. ■

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> **"Cloud computing is a solution looking for a problem. I don't need it right now.**
>
> CLARENCE WHITE, CIO, WESTERN U.S. BRANCH OF THE SALVATION ARMY

■ OPINION

Howard Rubin

IT's Future Lies in Sharing Resources

AN ASTOUNDING 85% of the world's computing capacity sits idle at any given moment yet consumes perhaps $250 billion in power, according to estimates in Alex Steffen's book, *Worldchanging*. So it's hard to imagine that capacity is growing at perhaps 28% per year for servers, 17% for mainframes and 45% for storage.

Now's the time for cross-organization sharing and scavenging of IT resources. It's a strategy called "technology commons."

The commons can be created by establishing technology "corridors" — like open space and green corridors in the environment — to enable large-scale sharing. These technology commons should be the basis of leveraging global technology capacity for the "basics" of tech-related services. That includes everything from simple consumables such as connectivity, desktop services and e-mail to processing power and data storage. In fact, it's easy to envision the Internet, Google's "cloud" and various offerings from Amazon, Yahoo and others as these new "commons."

In a 1968 article, biology professor Garrett Hardin set the stage for such thinking. "Picture a pasture open to all," he wrote. A herdsman grazing his animals on the land will have an incentive "to add another animal to his herd. And another; and another. But this is the conclusion reached by each and every rational herdsman sharing a commons. Therein is the tragedy. Each herdsman captures all the benefit from an extra animal, but the cost of overgrazing is borne by all."

Fast-forward 40 years and compare overgrazing to the use of "poison pill" service-level agreements. These SLAs benefit a single user or stakeholder but drive up the cost of the entire set of shared services. That cost must be "borne by all," but only a few get increased value.

■ Now's the time for cross-organization sharing and scavenging of IT resources.

Imagine, however, that you can build a true technology commons — a greenfield commons of the basic services within a company or across companies that provides core services at a basic level and aren't polluted by the needs of special interests. There would be no cost of "overgrazing"; rather, there would be only economies of scale.

The most fundamental of IT services could reside in this basic commons and could be extended to the more power-consuming services of computing (the cloud) and storage. This could be implemented at the application level, too. Software as a service is a good example of this new model.

There will always be special-interest groups with needs not served by the commons. For example, the financial services industry has specific e-mail needs that aren't met by services such as Gmail. But suppose Gmail-like services were the lowest-level commons, and next-level commons could add specialized features without polluting the cost structure of the basics. Using this model, it's clear that an organization with highly specialized needs would in fact be "uncommon," and its needs could be met only by having its own service.

Most organizations today would benefit from rethinking their shared-services strategy and moving to a true commons model with the removal of the overgrazed SLAs. That strategy would lead to enhanced economics of sharing and scale. At the same time, most organizations (and the planet) would benefit from collaboration that could result in those commons meeting more specialized but shared needs.

In our technology economy, "commons" sense is common sense. It meets the needs of organizations when an increasing source of waste is the underutilization of our growing technology resources. ■

Howard Rubin *is CEO of Rubin Systems Inc.* (www.rubinworldwide.com), *a professor emeritus at City University of New York, an MIT CISR research associate and a Gartner senior adviser.*

BOLD AGENDAS

What recession? These IT shops are pressing ahead with emerging-technology initiatives with a keen eye on future revenue potential.

BY THOMAS HOFFMAN

LIKE A LOT of organizations, Aspen Skiing Co. has zero-based all of its operating budgets for 2010, so approval is needed for any expenditure at all, not just increases in spending. And that, of course, means justifying all areas of IT spending for the new year.

But that austerity doesn't mean that the company, which operates four resort mountains in the Aspen/Snowmass, Colo., area, will scrap its investment in emerging technologies.

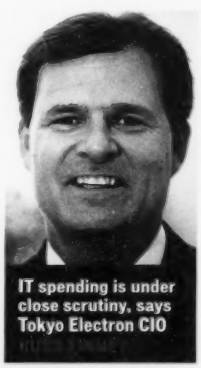
In fact, Aspen Skiing plans to expand its deployment of state-of-the-art radio frequency identification technology. Last season, it embedded RFID tags in its customers' season passes and installed automated access gates at the resorts. This winter, it's including RFID in all daily lift tickets as well. One potential future project involves using RFID tags to track all rental skis and boots at the four mountains. The company will also extend the RFID program so that ski passes can be used as stored-value cards in any of its retail shops and restaurants, says Paul Major, managing director of technology.

> **"[An expanded RFID deployment] helps us to identify our truly loyal customers."**
>
> PAUL MAJOR, MANAGING DIRECTOR OF TECHNOLOGY, ASPEN SKIING CO.

The expanded use of RFID technologies "helps us to identify our truly loyal customers," says Major.

Aspen Skiing is also designing smartphone applications that send alerts to customers' mobile phones when they're at one of its resorts, offering them product or service discounts and notifying them about upcoming resort activities, says Major. The types of iPhone and BlackBerry applications the company is developing "are potential revenue drivers," which could easily justify the small amount of money the company has set aside for such skunk works projects, says Major.

Aspen Skiing is hardly alone in its efforts. *Computerworld*'s 2010 Forecast survey of 312 IT executives found that despite tight budgets and a gloomy economic outlook, most companies (65%) aren't hesitating to try new technologies, and 32% of the respondents said their companies will continue to value experimentation with new technologies. Meanwhile, 51% said they won't cut back on efforts to use technology to create new business innovations.



IT spending is under close scrutiny, says Tokyo Electron CIO

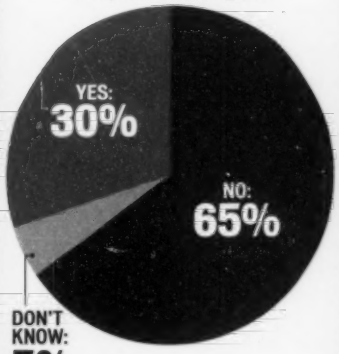
As companies continue to scrutinize their IT spending through at least the first half of this year, they will generally spend "a little bit less on R&D stuff and on blue-sky innovations," says Alex Cullen, an analyst at Forrester Research Inc. As with Aspen Skiing's skunk works project bucket, funding for emerging-technology initiatives often falls under "untracked spending" at many organizations, says Cullen.

Still, he adds, it's important for CIOs to tie emerging-technology initiatives directly to the company's business strategy to gain executive buy-in.

Russ Finney, vice president and CIO at semiconductor manufacturer Tokyo

NOT BACKING AWAY

Has the economy reduced your IT department's willingness to try new technologies?



EVER THE PIONEERS

In the next year, sanctioned technology experimentation will decrease and/or be valued less in my organization.

Very likely	6%
Likely	20%
Neither likely nor unlikely	42%
Unlikely	23%
Very unlikely	9%

YET SOME ARE CAUTIOUS

Has the economy prompted your organization to scale back its strategy for business innovation through technology?

SOURCE: EXCLUSIVE *COMPUTERWORLD* SURVEY OF 312 IT PROFESSIONALS, SEPTEMBER 2009

Electron U.S. Holdings Inc., says a tough business climate doesn't necessarily mean that emerging-technology investments have to generate a higher ROI. But senior management is more closely scrutinizing IT spending these days, he adds.

"If you had a couple of people looking at the hurdle rate before, now it's twice as many," says Finney. "So you'd better have a good story."

At Tokyo Electron, advanced search filtering and retrieval systems, such as the Thunderstone Search Appliance from Thunderstone Software LLC, let engineers scan a wide range of data sources using a single search bar, says Finney. A Google search on the same topic by two engineers would probably yield similar results, he says. But using Thunderstone's search tools, "we'll likely get different results based on their specific roles in the company," he says. "It's another step forward in knowledge management."

IT needs champions in high places, says Texas Health Resources CIO EDWARD W. MARX

Persuading senior management to invest in emerging technologies in tough times is a lot easier when you have at least one technology champion in your corner, says Edward W. Marx, senior vice president and CIO at Texas Health Resources Inc. That's true within his organization: Incoming Chairman Leonard Roberts was previously CEO of RadioShack and is an ardent supporter of IT initiatives.

That type of commitment is enabling the health care provider to test out new technologies for clinical applications. For instance, the company set up a two-day demonstration of Microsoft Corp.'s Surface multitouch computer at one of its hospitals in Dallas in September 2008. Nearly 200 clinicians stopped by to check out the device, which responds to natural hand gestures and real-world objects, and to offer their suggestions for potential applications, says Mike Skupien, an application architect for the Arlington, Texas-based company.

Skupien and his team then worked with Microsoft and a third-party developer to create a clinician/patient portal where physicians could open patients' records in their presence. Texas Health Resources is exploring two uses for the system this year: for orthopedic surgeons to provide background information to candidates for knee or hip replacements, and to help educate patients with chronic diseases such as pediatric diabetes.

SOCIAL MARKETING

With offices in Arizona and New York, McMurry Inc. competes with just a handful of custom publishers around the U.S. But while most of its competitors are "hunkered down in survival mentality," McMurry is making "exploratory investments" in social media and content aggregation tools for marketing purposes, says Saul Morse, vice president of client services for the company's interactive division.

Most of the investments McMurry is considering for social media applications are focused on creating effective strategies for clients, with little to no additional hardware or software investments required, he says. "It's pretty hard to monetize social media and content aggregation and come up with an ROI model," says Morse. "Our clients know they need to do it. It's about coming up with a business case for them."

McMurry is investing in social media, says Vice President SAUL MORSE

Like many organizations, Korn/Ferry International is investing more in collaboration tools this year to drive tighter communication between its internal consultants and with its clients. As a Microsoft shop, Korn/Ferry is considering Office Communicator 2010, a unified application that allows users to communicate and collaborate across different locations and time zones via instant messaging, voice, desktop sharing and video.

The system could be useful for the executive recruiting firm and its clients, says Senior Vice President and CIO

Dan Demeter. Because the system detects and manages each user's presence, Korn/Ferry could use it to determine when a client is online and coordinate videoconferencing calls to discuss potential job candidates, says Demeter.

"We're serving clients around the world, and they want visibility into the search process," he adds.

Korn/Ferry is investing in collaboration tools, says CIO

While shrinking revenue has forced some companies to cut back on emerging-tech investments, other organizations, such as BlueStar Energy Services Inc., continue to expand their IT operational and capital expenditures. BlueStar, a Chicago-based energy services company, plans to double its capital expenditures in 2010 and open a second software development center in either Chile or Costa Rica, says Chief Technology Officer Tom Keen.

BlueStar, which already operates a software development center in Lima, Peru, is looking to establish its own private cloud this year to improve the resiliency and scalability of its production environments, says Keen. The company is currently evaluating a technology called Puppet from Reductive Labs LLC to help manage and administer the cloud, says Keen.

By establishing a private cloud, BlueStar expects to leverage its existing server virtualization investments and invest about one-fourth what it might have otherwise spent to build out its technology infrastructure, says Keen. "We're re-leveraging a lot of our assets," he says. ■

BlueStar might set up a private cloud, says CTO

Hoffman *is a freelance writer in New York. Contact him at tom.hoffman24@gmail.com.*

RIDING THE CURVE

Technologies that might seem passé at some organizations are considered quite cutting-edge at others. Here's a look at a pest control company and a local government agency that are pushing the envelope in their respective industries.

Business intelligence tools have been available for a number of years, but using them in the pest control industry is a leading-edge move. Senior management at Marietta, Ga.-based Northwest Exterminating is making more extensive use of data mining tools and dashboards to track sales in the Southeast, says Director of Information Systems Matthew Metcalfe.

"The [BI] tools we've deployed are much further ahead, and the use of these tools is much more extensive in our company than what we've been able to gauge of our competitors, many of which have no IT staff at all," says Metcalfe, who manages a five-person IT group.

This year, the company expects to invest about $250,000 in dashboard systems from Dundas Data Visualization Inc. that are more advanced than the "basic" dashboards that executives had been using, says Metcalfe.

Decision-makers at Northwest Exterminating plan to use the dashboards to analyze and compare the popularity of various types of pest control services in different geographic areas to help the company target its sales and marketing more effectively.

Metcalfe says it's been pretty easy to justify the investments. When he first joined the company three years ago, regional sales figures were manually entered into Excel spreadsheets, "and the numbers weren't right," says Metcalfe.

Since then, IT spending has continued to grow, and senior executives are now using dashboards to track territorial sales more closely and more accurately, he says.

Thin-client computing is hot in the public sector, where government agencies are trying desperately to lower IT costs. The city of Roanoke, Va., is moving to a thin-client architecture in order to potentially double or even triple the life span of its desktop devices, says Director of Technology Roy Mentkow. The project also means shifting to a platform that requires less security and is easy to manage with fewer technicians.

The city's IT budget is down about 2.5% for 2010, while tax revenue has remained stable, says Mentkow. Infrastructure-related upgrades such as the thin-client initiative are typically planned a few years ahead of time, he says.

Mentkow says Roanoke expects to have deployed approximately 150 Dell OptiPlex thin desktops running Citrix to replace its oldest workstations by the end of 2010. Each year, the city sets aside $150,000 to refresh a percentage of its 1,200 desktops, according to Mentkow.

At some point, Roanoke will transition some of the PCs "that still have legs under them" and repurpose them as virtualized desktops, says Mentkow. The current focus is on deploying the thin-client machines, he notes, and he's not sure when the city will begin implementing virtual desktops.

– THOMAS HOFFMAN

THE CRYSTAL BALL

Six industry pundits put it on the line with some thought-provoking predictions for 2010.

SWAMPED BY PERSONAL TECH

"PC sales in the corporate market have been very slow for some time. In fact, the average PC is nearly five years old. In the meantime, e-readers, smartphones, netbooks and consumer laptops have flooded into the market at aggressive price points. By the end of 2010, IT is likely to feel a bit overwhelmed by the growing number of employees at all levels who want help getting their personal tech to work with corporate resources.

– **ROB ENDERLE,** principal analyst, Enderle Group

AN END TO NET FREEBIES

"The Internet was a non-commercial environment for the first 30 years of its existence, establishing a core nonprofit ethic. 2010 will be the year this sort of "dumb" free will transition to "smart" free. Vendors will always have free "tastes," but they will increasingly position their best offerings behind caps, subscriptions and/or micropayments. Broadband services are likely to introduce caps of 50GB per month, after which extra charges will apply. Print media may first go bankrupt; then, eventually, the supply of high-quality content will be so restricted that users will gladly pay subscriptions.

– **BO PARKER,** managing director of PricewaterhouseCoopers' Center for Technology and Innovation

FACEBOOK-WEARY

"We will see social networking fatigue, but savvy users will continue to use platforms to build their personal brands. For most people, updating Facebook gets tedious, and your "friends" really don't care which Hogwarts faculty member you are. Twitter takes a lot of work, although it can be a great personal brand-builder, with enough effort. LinkedIn is improving, mostly because of its Answers section; users can become well-regarded authorities in their subject areas by investing an hour or two per week posting thoughtful questions and responses. Plaxo? Please stop pestering me. You're too far down my social networking depth chart for me to spend any time with you.

– **MIKE DOVER,** co-author of the upcoming book *Wikibrands: How to Build a Brand in a Customer-Controlled Marketplace*

SEEING INTO THE FUTURE

"Superman's X-ray vision will become a reality. Well, not quite, but close. The University of Utah has developed a way to look through building walls using a network of inexpensive radios. Fire departments will use these to find people inside burning buildings. Police will use them to track down criminals. Shopping malls, subways, sports arenas and other public places will use these systems to determine how individuals move around public spaces.

– **BARRY NANCE,** *Computerworld* columnist and managing partner at Leverage Partners Inc.

PRIVACY DIES

"Ten years ago, the privacy industry was booming. In 2010, we are on the cusp of having privacy voted off the "things we care about" island. Senior management will continue to be consumed by core issues of cost, value and brand differentiation. Sadly, the self-referential privacy community has not successfully translated its message into the language of business. More damaging to the long-term survivability of the privacy profession is the failure to understand and meaningfully engage the semi-nonexistent privacy concerns of next-generation leaders – the millennials.

– **THORNTON A. MAY,** *Computerworld* columnist, longtime industry observer, management consultant and commentator

SLOW TO STAFF UP

"IT hiring will not pick up noticeably until late next year, and more likely 2011, despite GDP upturns and recovering stock prices in our nation's third straight year of economic instability. Expect the length of the tail on this staffing lag to be much longer than previous recoveries, with volatility punctuating IT pay levels and specialty skills demand as employers struggle to recalibrate their IT workforces by striking the right balance between costs, agility and intense competitive market pressures – which is a moving target.

– **DAVID FOOTE,** CEO and chief research officer, Foote Partners LLC

SOCIALLY SAVVY

"While the concept of a social networking guru might seem quaint by 2013 (do you have a photocopier guru in your office?), there is an opportunity in 2010 for people who really understand how to make social networking happen within the enterprise. While there are still a lot of carpetbaggers and "gee-whiz" cheerleaders playing in this market, I still find that there are a lot of people who don't have a basic understanding of social networking and are reluctant to ask for help.

– **MIKE DOVER**

SUPERSIZED SERVERS

Virtualization will hit a hot streak in 2010, and enterprises will order more systems fully loaded with maximum processing power, memory and I/O capabilities.

BY ROBERT L. MITCHELL

THE RECESSION may have forced Media General Inc. to scale back its grand plans for server virtualization in 2009, but like many other businesses, the communications company is planning a major push to make up lost ground this year. "Pretty much everything is being virtualized," says Mike Miller, director of information security, who oversees virtualization and server standards.

Media General has already consolidated by converting 250 servers into virtual machines running on 19 physical machines. Miller says he hopes to convert a big chunk of the other 400 servers this year. Other IT executives say they're ramping up virtualization efforts of their own. As virtualization hits the tipping point, it's redefining server requirements for 2010.

In *Computerworld*'s 2010 Forecast survey, 64% of 312 professionals polled said that their organizations are likely or very likely to virtualize more servers in 2010. How many more? Gartner Inc. estimates that 55% of all new workloads will be deployed on virtual servers this year, up from 40% in 2009. The research firm predicts that by the end of this year, 24% of all workloads will be running virtually. Overall, IDC projects server shipments to hit 6.9 million this year, about 6% higher than in 2009 but 16% lower than in 2008, when shipments peaked at 8.1 million. Because of virtualization, servers shipping this year will be more heavily configured than they were in the past, especially with respect to memory, says IDC analyst Daniel Harrington.

WHAT IT WANTS

To host those virtual servers, users are demanding physical servers with faster processors, more memory, and expanded network and storage I/O capacity. As a result, vendors say they are seeing servers go out the door with every processor and memory socket filled.

Miller says traditional roadblocks to virtualization, such as storage and network I/O bottlenecks, have largely been addressed, so he's moving his Citrix servers, Microsoft Exchange mail servers and SQL Server applications into virtual machines. "There's nothing that's off-limits," he says.

At Qualcomm Inc., IT staff manager David Hewett will be shopping for processor technologies that will enhance virtual server performance. The company plans to purchase dense blade servers as well as rack-mounted servers this year. Hewett says Qualcomm is looking at 16-core Niagara processors from Sun Microsystems with 256 threads per chip, as well as servers built using upcoming six- and eight-core Intel Xeon Nehalem-EX processors.

Other organizations are buying new servers to host virtual desktops. In Seminole County, Fla., the

SERVING UP SERVERS

IT executives will be keeping a close eye on their servers this year. Their priorities are squarely focused on servers and virtualization.

TOP 5 technologies most likely to be the target of spending increases in 2010:

1	Servers	40%
2	Storage-area networks	28%
3	Disaster recovery/ continuity planning	25%
4	Virtualization technologies	25%
5	Networking equipment	17%

TOP 5 project priorities for 2010:

1	Server upgrades, virtualization	31%
2	Storage backup, SAN, NAS	28%
3	Security projects	26%
4	Disaster recovery initiatives	23%
5	Data management, data mining	20%

TOP 5 most promising new technologies for respondents' industries or organizations:

1	Virtualization	47%
2	Mobile/wireless	27%
3	Business intelligence	22%
4	Storage	20%
5	Unified communications	18%

TOP 5 technology areas for beta testing:

1	Virtualization	32%
2	Cloud computing	14%
3	Security	14%
4	Mobile applications	14%
5	Desktop management	13%

SOURCE: EXCLUSIVE *COMPUTERWORLD* SURVEY OF 312 IT PROFESSIONALS, SEPTEMBER 2009. MULTIPLE RESPONSES ALLOWED.

county government is halfway done migrating 197 physical servers to VMware virtual machines running on four-socket, eight-core HP blades. The county also plans to start virtualizing desktops on a similar hardware platform that runs VMware Inc.'s vSphere with "zero client" endpoint devices from Pano Logic Inc. "We're trying to push as much support back into the data center as we can," says Robert Beach, the county's director of IT services.

Last year, Media General bought rack-mounted servers equipped with dual-socket, quad-core processors loaded with 48GB of RAM for just under $5,000 — Miller's pricing "sweet spot." Those systems can host 30 to 40 virtual servers. This year, Miller plans to buy six-core, dual-socket servers with 64GB of RAM that will support 50 virtual machines — for the same price.

Miller is "probably right" about how much he'll spend, says Paul Prince, chief technology officer of the enterprise product group at Dell Inc. The biggest trends for 2010, he says, will be more memory, faster processors and more aggressive I/O. Prince also says he expects to see a higher demand for blade servers, a popular consolidation platform. But he warns that as IT moves from 20 virtual servers per physical machine to 30, 50, 100 or more, availability requirements start to rise — and that may force people like Miller to either spread out the load or move beyond that $5,000 sweet spot to higher-end systems with more robust memory subsystems and other high-availability features. Technically, a dual-socket system designed around Intel Corp.'s Westmere chip will be capable of supporting 100 virtual machines. But will you want to go there? "At some point, you have to ask yourself how many eggs you want in one basket," Prince says.

Online brokerage Scottrade Inc. is virtualizing its front-end 1U servers and migrating them onto server blades. "We've gone to full-blown virtualization, especially on our front ends, and we see the expansion of that continuing," says CIO Ian Patterson. As a host for virtual machines, blade servers are on par with what 1U systems can offer, he says. "The chips are faster, performance of the backplane and chassis throughput is faster," says Patterson. The reduced latency and improved throughput within the blade server chassis was a critical factor in Scottrade's decision to move from 1U servers to blades.

But the servers that power the brokerage's "ticker plant," which handles trades, are still 1U models — for now. "We use the biggest boxes Dell has," Patterson says. Each 1U server is maxed out with memory and processors, and that's still not enough. "We're looking at re-evaluating how we do that, because of speed and latency issues," he says. "When you grow [to] over 200 servers, you have to think, is there a better mousetrap?" One option Patterson considered was building Scottrade's software algorithms into the firmware to boost performance.

Many organizations with high-performance computing needs rely on InfiniBand as a high-speed, low-latency interconnect between servers. That might change, says Prince. As prices come down and the technology moves into the mainstream, he expects the use of 10 Gigabit Ethernet in high-performance environments to gather steam. "If you're an InfiniBand shop, now may be the time to move to Ethernet," he says.

> **We've lucked out in that all the applications we've done so far are licensed on a per-server or a per-user basis and . . . the vendor doesn't care whether it's physical or virtual.**
>
> DIRECTOR OF INFORMATION SECURITY, MEDIA GENERAL INC.

RETURN TO GREEN

Green IT fell victim to budget cuts in 2009, with organizations focused on improving energy efficiency acting only when they were running out of power or cooling capacity in the data center. If it cost extra, IT wasn't buying. Prince says that Dell's small and midsize business customers have hesitated to pay extra to buy Energy Star-rated products.

In the enterprise, it's all about data center real estate, and server consolidation projects enabled by virtualization are opening up floor space, says Rocky Bonecutter, managing partner at Accen-

STEP 2: VIRTUAL SERVER CONSOLIDATION

OK, you've virtualized as much as you can. Now what? Consolidating physical servers through virtualization doesn't address underlying complexities because it doesn't reduce the total number of servers you're managing. Here are three tips for taking it to the next level.

1. Contain virtual server sprawl. Just because it's easy to deploy virtual servers, that doesn't mean you should. Have a policy in place that adds some "friction" to the process, says Gartner analyst Tom Bittman. For example, every new server deployment should carry a significant chargeback cost.

2. Rationalize applications. Do you really need all of those apps? Ask users to take ownership of and justify both existing and proposed server-based applications.

3. "Horizontalize" the application infrastructure. A shared infrastructure is good; shared software is better. Business units serving different vertical markets might be using similar types of applications. You might be able to consolidate those applications – and the infrastructure and development efforts that surround them – into a single shared resource.

Consolidating applications is a priority for James Fortner, a general manager at P&G. "This is a change that has to happen," he says. "We will focus on the business value [of each application] and driving more business value with shared services."

– ROBERT L. MITCHELL

ture Ltd. If a rack full of high-density servers is too hot or there aren't enough power cables to a rack to fully load it with servers, data center administrators typically spread them out a bit. But energy efficiency is coming back into focus this year. "There's a renewed interest in sustainability," says Bonecutter.

Energy efficiency is a big concern for Jai Chanani, director of technical services at Rent-A-Center Inc. He's consolidating through virtualization, and he's partially filling some racks. But, he says, "we want to make sure we're using power efficiently because of the cost." He's looking for features such as intelligent power management and power-saving hardware such as the variable-speed cooling fans used on his HP BladeSystem c-Class server blades.

Lorraine Bartlett, vice president of business-critical systems at Hewlett-Packard Co., says the vendor will continue to focus on energy efficiency and cooling requirements this year. In the mission-critical server area, HP moved its NonStop servers to a blade architecture last year. That doubled performance, cut the footprint in half and kept energy use in check — but it also increased power density, which means more heat in a smaller space. This year, NonStop systems built around Intel's Itanium Tukwila processor will offer 25% better performance while using 25% less power, Bartlett says.

LIMITED BY LICENSING

James Fortner, general manager of IT infrastructure and corporate real estate for the global business services division of The Procter & Gamble Co., says P&G is migrating all of its mission-critical systems to a hosted data center operated by HP in Atlanta. (P&G has outsourced most of its IT operations to HP.) P&G wants best-in-class disaster recovery, and it wants all of its critical servers to be backed by service-level agreements that require vendors to respond within two hours if there's a problem. "That's the No. 1 project this year," says Fortner.

Virtualization and Itanium-based blades are part of that strategy, says Steve Lutz, vice president and general manager at HP. "You'll see us dealing with more power density to compute power in each blade and better virtualization at the chip level," Lutz says. What's slowing the process, he says, is the inability of enterprise software vendors like Oracle Corp. and SAP AG to formally support virtualization and optimize their software to take full advantage of virtualization's capabilities.

"Vendors do not have an explicit policy for supporting virtual machines yet," adds Gartner analyst Tom Bittman.

Software licenses based on the total number of processors are also placing limits on which applications can be consolidated onto multiprocessor servers. "This forces users to go with dual-processor systems," Bittman says. IDC predicts a relative increase in shipments of two-processor servers in 2010, with four-processor servers continuing to account for 5% to 6% of all shipments. Bittman's advice: "Don't go to large servers unless you know it won't raise your licensing costs." However, some vendors, including Microsoft Corp. and Citrix Systems Inc., have changed their licensing models to accommodate virtual machines.

So far, licensing issues haven't held back Media General. "We've lucked out in that all the applications we've done so far are licensed on a per-server or a per-user basis and . . . the vendor doesn't care whether it's physical or virtual," Miller says. But he's still sticking with dual-socket systems. Four- or eight-socket systems concentrate too much power and too many virtual machines into too small of a space for his taste. "That makes me nervous. I like spreading out the load," he says. Nonetheless, licensing costs are still a big issue. For every $5,000 Miller spends on a server, he spends another $7,000 on infrastructure software, such as Windows Server, backup software and VMware.

With budget pressures still a concern, IT departments will remain intently focused on virtualization and consolidation. "I want to reduce my count," says Beach. "We don't see anything that limits us technologywise." ■

6 HOT SKILLS FOR 2010

A slowly reviving economy will have organizations hiring in a few key areas, looking for IT pros with a mix of skills.

BY MARY BRANDEL

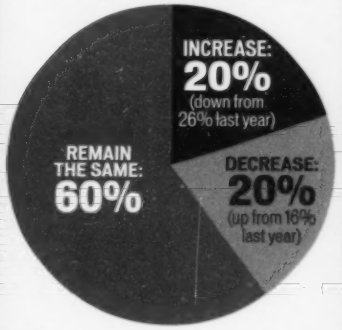
PENT-UP DEMAND for new projects. Veteran employees leaving the company. Who could complain about such pressures in the waning months of 2009, when the year was spent under a cloud of economic misery?

Certainly not Shane Kilgore, IT director at Randall-Reilly Publishing Co. in Tuscaloosa, Ala. He was dismayed to see two talented software developers give notice recently. One had five years under his belt and the other had 10, but Kilgore took their departures as a sign that the economy is taking its first steps toward recovery. He plans to hire a few new developers this year, not only to re-

Continued on page 34

NET ZERO

Most organizations are sticking with the status quo when it comes to IT employee head counts this year.



HOT FOR DEVELOPERS

Organizations that expect to hire this year will be looking for candidates with the following skills:

1	Programming/ application development	61%
2	Help desk/ technical support	48%
3	Networking	39%
4	Project management	33%
5	Security	28%
6	Business intelligence	25%
7	Data center	13%
8	Telecommunications	13%
9	Web 2.0	8%

Note: Multiple responses allowed.

PROJECTS RESTART

Organizations that expect to hire this year will put those new employees to work on the following projects:

1	New systems/projects	69%
2	Corporate growth/ systems expansion	53%
3	Security initiatives	25%
4	Regulatory compliance demands	18%

Note: Multiple responses allowed.

SOURCE: EXCLUSIVE *COMPUTERWORLD* SURVEY OF 312 IT PROFESSIONALS, SEPTEMBER 2009

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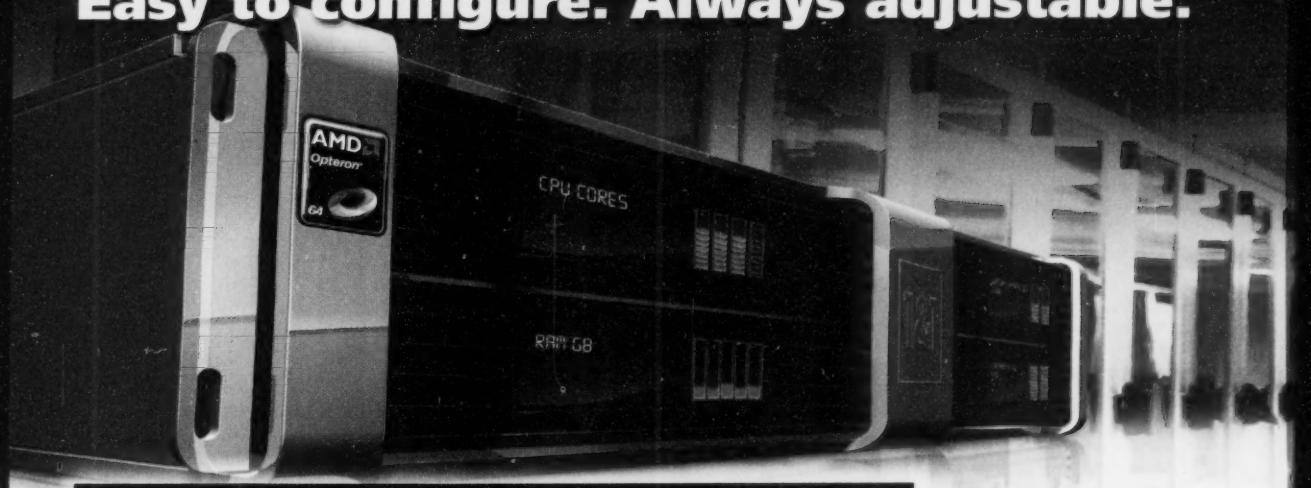

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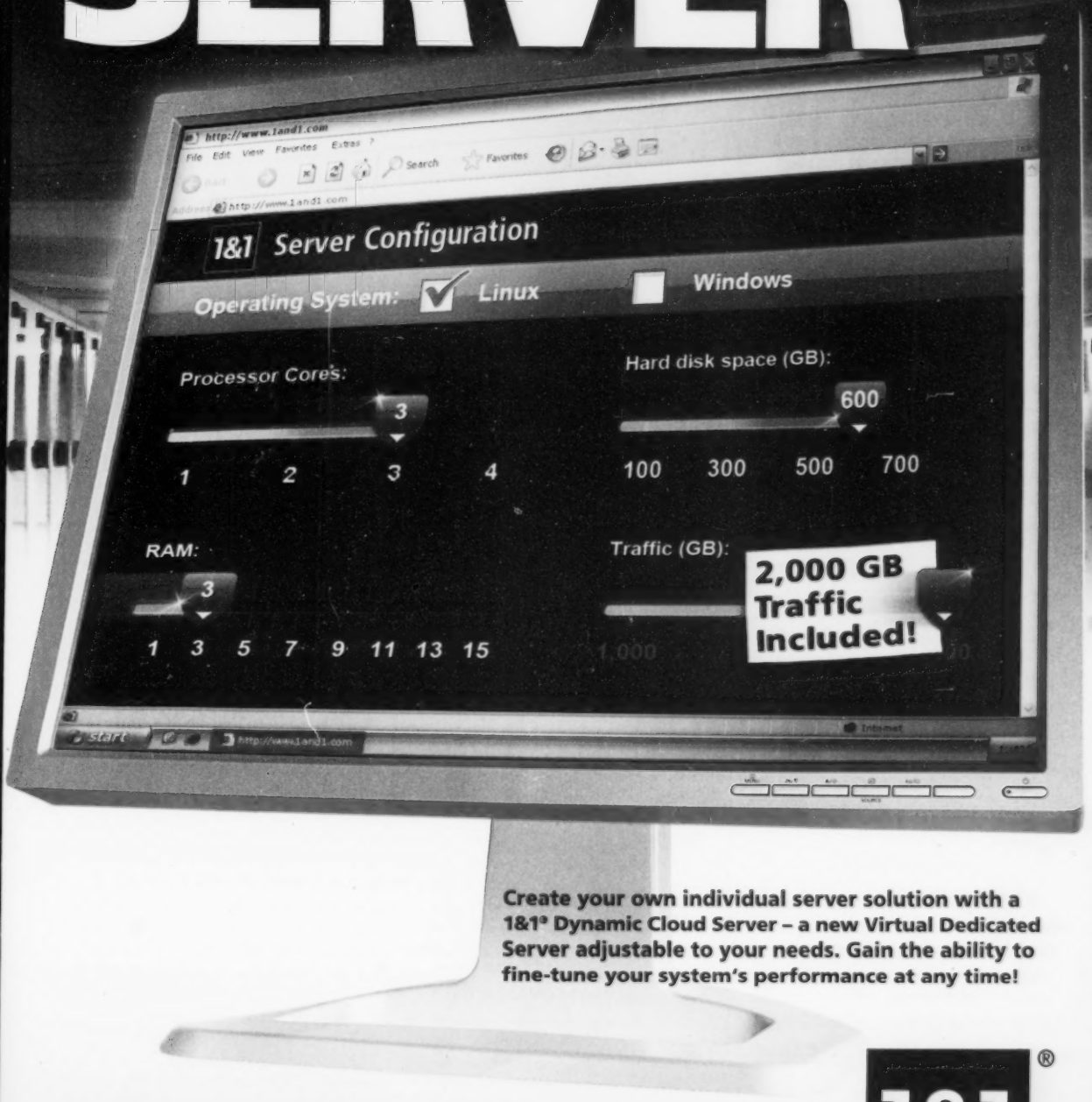

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Continued from page 31

place the ones who left, but also to work on new products that will be in demand when — as many economists predict — the recovery gains headwind this year.

"Things have been frozen because of the economy," Kilgore says. "But if we don't get new products out there, we won't have enough places for customers to put their money."

Still, with signs pointing to recovery and even job growth in 2010, companies such as Randall-Reilly are planning to hire only in key areas, and even then, they will favor people with skills that span multiple disciplines. In many cases, companies will still resist bringing on full-time employees, says Tom Silver, senior vice president for North America at Dice Holdings Inc., which operates Dice.com and other careers Web sites. "One thing we see companies do is bring people in on a project basis, and then as business comes back, they hire them full time," Silver says.

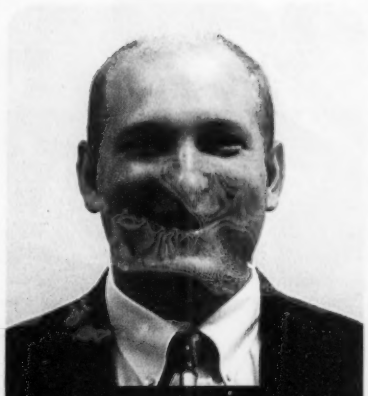
According to *Computerworld*'s 2010 Forecast survey, this year's hiring plans certainly aren't at 2009 levels. Less than 20% of the 312 IT executives polled said they plan to increase IT head count in the next 12 months, compared with 26% last year (see charts, page 31). And nearly 20% said they plan to decrease their IT head count.

For IT professionals who are either looking to get back into the workforce or mulling moves to greener pastures, here are the six types of skills most in demand among survey respondents who said they expect to hire IT workers in 2010.

1 PROGRAMMING/ APPLICATION DEVELOPMENT

Among companies that plan to hire, the top reason for doing so is to meet demand for new systems and projects. That could be why programming/application development is the skill set that's most in demand, by far, according to *Computerworld*'s survey.

"We're actually seeing new projects get the green light," says Dave Willmer, executive director of IT staffing firm Robert Half Technology. Quite possibly, he says, these were projects that were canceled at the end of 2008, only to be revived for 2010.



"We're striving for continual improvement. If something takes 10 hours today, we're asking how we can make it take one-tenth of that."

JAMES SULLIVAN, MANAGER OF INFORMATION SERVICES, COVIDIEN

The wave of new projects is also leading to demand for application developers who can double as business analysts and project managers, Willmer says.

Specifically, companies will look for developers with knowledge of .Net, Java, Web development, open source and portal technologies such as Microsoft Corp.'s Sharepoint, says Willmer, who is a *Computerworld* columnist.

Demand is growing for people who know specialized programming languages like Ruby on Rails and AJAX, Silver notes. There aren't many jobs that require those skills, he says, but the number of openings has increased since January 2009.

Kilgore says he would like to find a "hybrid" software developer who can also serve as a business analyst. "We need someone who can talk to the business and be a requirements gatherer, project manager and software developer, all rolled into one," he says. He also needs developers with open-source expertise — a rare talent, he says — as well as professionals familiar with Microsoft tools for the ERP and marketing intelligence sides of the business.

Willmer says it makes sense that companies are looking for developers with skills in other areas, such as business analysis or even quality assurance, since employers are concerned about the cost of talent. "They're making sure they get the most out of their resources," he says.

Computerworld's Forecast survey respondents said they also need developers to build homegrown applications in an effort to save money. That's the case for James Sullivan, manager of information services at Covidien, a global healthcare company in Mansfield, Mass.

Sullivan soon hopes to add three or four business-savvy programmer/analysts with Java or .Net backgrounds and an understanding of SQL databases. That represents a 25% increase in his usual hiring levels, he says, and it's a departure from previous years when he looked for programming skills alone.

One of Covidien's 2010 projects is to migrate from third-party custom-built applications to commercial off-the-shelf applications or bring them in-house. This, Sullivan says, would reduce spending on vendors and consultants, as well as enable his group to provide the support and turn around business-driven changes more quickly. This dovetails with a growing trend at Covidien to better leverage existing resources. "If something takes 10 hours today, we're asking how we can make it take one-tenth of that," Sullivan says.

At Scottrade Inc., the recession didn't affect hiring, according to Ian Patterson, CIO at the online financial services company. He hired more than 150 IT professionals in 2009 and plans to hire up to 200 this year to meet demand for new internal and customer-facing applications, and to keep up with changes and expansions. He says he's mainly looking for people with C++, Java and C# skills and notes that the company is also implementing a Siebel CRM system for the call center.

Energy Northwest, a power supplier in Richland, Wash., also saw continued growth in 2009. CIO Keith Cooke is looking for computer and electrical engineers with Java, Web and .Net skills to help fully Web-enable an internal sys-

Continued on page 36

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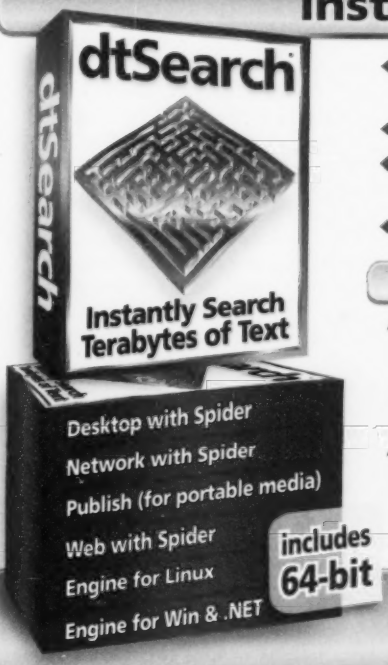

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Continued from page 34

tem that is partially Web-based but still uses a terminal-based interface. Initially, he didn't want to retrain staff to use a browser-based interface. Now, however, "we're bringing on people who can help us adapt our legacy system to the new workforces coming in," Cooke says.

2 HELP DESK/ TECHNICAL SUPPORT

It's no surprise that there will be strong demand for the people who make the help desk hum in 2010, Silver says. The need for support technicians tends to reflect general business conditions, he says. "As the business starts to improve, companies hire more people, which increases demand for help desk staff," Silver explains.

Willmer says he's already seeing a rise in demand for help desk and support skills, especially among companies that cut too deeply in this area in 2009. "They can get away with it for a certain time period, but it eventually catches up and affects revenue," he says. Instead of offering full-time positions, however, some companies are hiring on a project basis, he adds.

3 NETWORKING

The demand for networking professionals, Willmer says, is likely connected to the growing complexity of networks and to the stresses placed on them by virtualization and newly popular approaches to application delivery, such as cloud computing and software as a service.

Cooke says the network will be a big area of focus in the coming year. Energy Northwest is making increasing use of video and voice over its IP network, so it will need network, voice and radio engineers to handle upgrades and ensure compliance with new federal mandates. One of those mandates requires the company to move from wideband to narrowband radio frequencies.

Patterson sees Scottrade dabbling with a converged infrastructure in the next 12 months, driving a need for people with a mix of server, software and networking skills to support networked storage and server devices contained in a single chassis. "This will change the market for the type of people we need," he says. "It won't be just a guy who knows EMC and Hitachi storage, but [one] who knows server, storage and networking all in one device. We'll need a guy who says, 'The network has a problem here,' but when he traces it down, the problem is due to a lock on a table in the storage device."

4 PROJECT MANAGEMENT

Silver sees project management as an area that is growing in importance and a good avenue for technology professionals interested in building up their careers. "Professionals who understand technology and how it fits in the overall business strategy are the ones who add the most value, get paid more and have the most fulfilling careers," he says.

5 SECURITY

Willmer sees a relationship between demand for security skills and the still-shaky economy. "The biggest threat to companies is breaches by their own staff," he says. "When you throw in changes to the staff and disgruntled employees losing their benefits or facing the threat of being laid off, you increase the chances of network fraud or security infringement."

Meanwhile, Cooke is concentrating on hiring people with cybersecurity skills. "Ten years ago, we didn't worry — as leaders in our companies — about things like passwords," he says. "Now we're making sure we support complex passwords. That's just a new reality." Energy Northwest is looking for recent graduates who studied computer engineering and digital controls to help upgrade its manufacturing systems from analog to digital. "They need to understand how those systems should be protected, given the security world we're operating in," Cooke says, citing new federal regulations and threat warnings emanating from the Department of Homeland Security.

Patterson thinks the trend toward including security features in network and storage devices will also affect the skills professionals need in this realm. "I can't believe in the long term that you won't see companies like EMC or Cisco not embedding security into their devices," he says. "We're going to need people who understand not just how to run things from a server or storage or network perspective, but also the security implications."

Security is an evergreen skill, according to Silver. "If you know how to help keep your company's information secure, there will be a home for you forever," he says.

6 BUSINESS INTELLIGENCE

Computerworld's survey respondents ranked business intelligence skills as No. 6 in importance; for Kilgore, however, BI is a higher priority. "Being a smaller midsize organization, we're late to the game in BI," he says. "We don't have the budget to do a year's worth of R&D; we have to be effective with it out of the gate."

Sullivan would like to find a data architect to help with Covidien's conversion from a nonstandard business intelligence system and miscellaneous reporting tools to an enterprise standard. More important than a BI expert, though, are programmer/analysts who can relate the nitty-gritty of data tables, database joins and data structure to business requirements. "That's what I'm finding is more valuable to us at this stage in getting BI established and used by the business," Sullivan says.

Meanwhile, at Scottrade, Patterson sees BI intertwined with Web 2.0. Whereas BI has traditionally been understood as a system that collects historical data and provides tools to analyze it, he says, he's now more interested in real-time BI that relies, for instance, on people entering competitive data into a wiki and providing that information almost instantaneously via a portal. ■

Brandel *is a* Computerworld *contributing writer. Contact her at marybrandel@verizon.net.*

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FORECAST 2010

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IT WORKERS WHO BREATHE SOCIAL NETWORKING

Social media may have started out as a fad, but it's quickly winning serious corporate converts. The search will intensify in 2010 for IT specialists who can engage audiences in their company's messages, products and services. The skills sets in demand will be technical but also heavily business- and consumer-focused, with many industry- and situationally specific flavors.
– **DAVID FOOTE,** CEO and chief research officer, Foote Partners LLC

AMAZON OUTPEDDLES EBAY

Amazon.com's stock hit an all-time high in October, and yes, that includes the company's highs during the dot-com bubble. It's successful because of the clear attention paid to the corporate mission (acquiring customer service darling Zappos will only help here) and tremendous management science – its collaborative filtering engine gets better and better. And finally, its superior vendor platform that requires sellers to provide more information and a higher-level of quality than eBay. As a result of this, Amazon offers much more security for the buyer.
– **MIKE DOVER,** co-author of the upcoming book *Wikibrands: How to Build a Brand in a Customer-Controlled Marketplace*

LOSERS

ORACLE GETS OUSTED?

In off-the-record, libation-enhanced conversations with CIOs, when you mention the word *Oracle* – they see red. In 2010, we may see another instance of Oracle firing its entire sales force as an apology to the industry for customer abuse. In 2010, CIOs have choices, and when possible, Oracle will not be one of them.
– **THORNTON A. MAY,** *Computerworld* columnist, longtime industry observer, management consultant and commentator

BIG COMPANIES THAT LAG

As the recession ends, midsize companies will increase IT spending faster than large companies. In 2009, most companies cut IT spending dramatically. New IT capabilities were deferred in favor of virtualization, ITIL and other internal efficiency efforts. As the economy improves, executives in large companies who have always believed that IT is too expensive will be unwilling to allow spending to increase significantly. Smaller organizations won't have a choice. Many of their cuts harmed service levels or critical business programs.
– **BART PERKINS,** *Computerworld* columnist and managing partner at Leverage Partners Inc.

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2X Software LLC 18
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Actuate Corp. 4
Amazon.com Inc. 19, 21, 23, 38
American Bible Society 21
Apple Inc. 10
Aspen Skiing Co. 24
Bargreen Ellingson Inc. 17
BlueStar Energy Services Inc. 26
Burton Group 21
Cardinal Health 40
CIO Executive Board 6
Cisco Systems Inc. 36
Citrix Systems Inc. 18, 30
City University of New York 23
Clean Harbors Environmental Services Inc. 18
Covidien 34
DataCenterDynamics Inc. 8
Dell Inc. 29
Diamond Management & Technology Consultants Inc. 4
Dice Holdings Inc. 31
Dundas Data Visualization Inc. 26
eBay Inc. 38
EMC Corp. 36
Enderle Group 27
Energy Northwest 34
Extract Systems Inc. 8
Facebook Inc. 8, 19, 27
Federal Trade Commission 10
Florida State College at Jacksonville 40
Foote Partners LLC 27, 38
Forrester Research Inc. 18, 24
Gartner Inc. 4, 8, 23, 28, 30
Google Inc. 10, 22, 23
Hand Arendall LLC 22
Hewlett-Packard Co. 30
Hitachi Ltd. 36
HomeTown Bank 22
HSBC Bank 8
IBM 20
IDC 6, 10, 28
Informative Graphics Corp. 8
Intel Corp. 10, 29
IT Leadership Academy 40
Jaspersoft Corp. 4
Jedox AG 4
Korn/Ferry International 25
Leverage Partners Inc. 27, 38
LinkedIn Corp. 27
McMurry Inc. 25
Media General Inc. 28
Merck & Co. 8
Microsoft Corp. 8, 10, 18, 25, 30, 34
MIT 23
Mueller Water Products 18
Murphy Insights 8
Natural Resources Canada 8
New York State Office of Temporary and Disability Assistance 21
Onstream Systems Ltd. 8
Oracle Corp. 18, 30, 38
Pano Logic Inc. 29
Pentaho Corp. 4
Plaxo Inc. 27
PricewaterhouseCoopers 27
Qualcomm Inc. 28
RadioShack Corp. 25
Randall-Reilly Publishing Company LLC 31
Reductive Labs LLC 26
Rent-A-Center Inc. 30
Research In Motion Ltd. 10
Robert Half Technology 31
Rubin Systems Inc. 23
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Scottrade Inc. 29, 34
SpagoWorld 4
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Yahoo Inc. 10, 23

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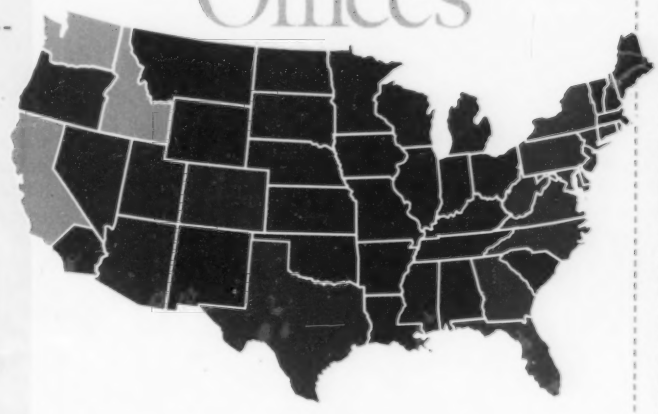

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■ OPINION

Thornton A. May

Time for a Little Era Awareness

HERE'S A NEWS FLASH from the world of futures research: The best days of IT are upon us. This will be true for your IT department only if you realize that the IT decisions we make in 2010 really matter, if you are fully cognizant of the technical and psychopolitical realities of the era that commences in 2010, and if you publicize and enumerate the value IT can create.

Far too many of the fine men and women working in IT today lack a sense of history (that is, where we've been and where we are) and the ability to imagine the IT-enabled opportunities of 2010 and beyond. In a way, they are nearly medieval. The people who inhabited what we now call the Middle Ages did not *know* they were living in the Middle Ages. Most of them had no sense that they could make their lives better. They had no expectation that the day that followed would be any different. Middle Agers were locked in time — and so are many IT leaders.

The most important developments in the coming year will be associated with redrawing IT's attitudinal map — bringing how we think about IT more in line with the opportunities and realities of the age in which we live.

IT leaders who don't want to be caught "era-unaware" need to focus on three areas: weeding out negative influences within their departments, optimizing infrastructure, and convincing users at long last that IT has value but is not free — that business choices have cost implications for IT.

Defanging the angry few. Research associated with the IT Leadership Academy's "The Human Side of IT Value Creation" project indicates that 12.5% of the Western IT workforce is angry. These employees feel that they have been done wrong and that the IT industry owes them something. They are the sad folks who think that they should be running the show because they have a couple of certifications and once were able to charge outrageous rates for poorly designed and poorly conceived enterprise systems that were deployed in ways bordering on malfeasance. These people pose a real danger to the future of IT. In 2010, IT leaders need to identify them and get them gone or get them help.

■ IT leaders who don't want to be caught 'era-unaware' need to focus on three areas.

Prospecting for infrastructure gold. IT needs to reach in and grab what Geoffrey Moore calls the "coins in the couch" — the cash flow that can be generated by collapsing the costs of IT infrastructure. There is a bag of money to be saved via virtualization, green IT, cloud computing and right-sourcing. Gordon Wood, author of *Empire of Liberty*, notes that in America's early national period, "America changed so much and so rapidly that Americans not only became used to change but came to expect it and prize it." In 2010, we need this kind of pro-change infrastructure thinking.

IT financial transparency. In 2010, IT needs to step up and boldly announce to the world, "We have value." IT is being held hostage by misguided attitudes about the value it can create. It needs to be like the young Caesar, who told his pirate kidnappers that they needed to double the ransom they were asking.

Many business executives are confused by the fact that while computing, storage and bandwidth costs have declined precipitously, IT costs keep going up. Jody Davids, the former CIO at Cardinal Health, explained to me that a wise CIO always makes sure to demonstrate impressive year-over-year improvement in the *unit cost* of computational functionality, so that it's clear that user demand is what's driving aggregate cost increases. One of the most important attitudinal changes in 2010 will be materially improving IT demand management. ■

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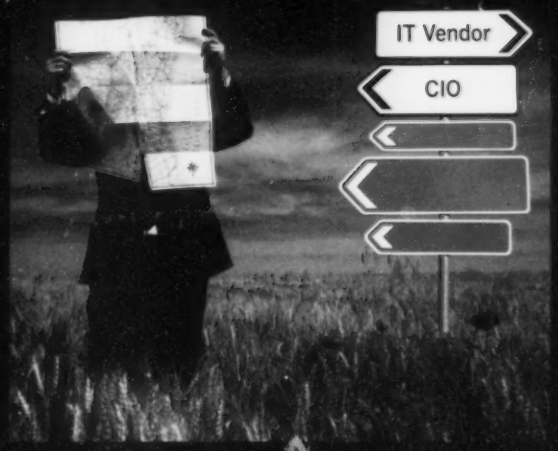

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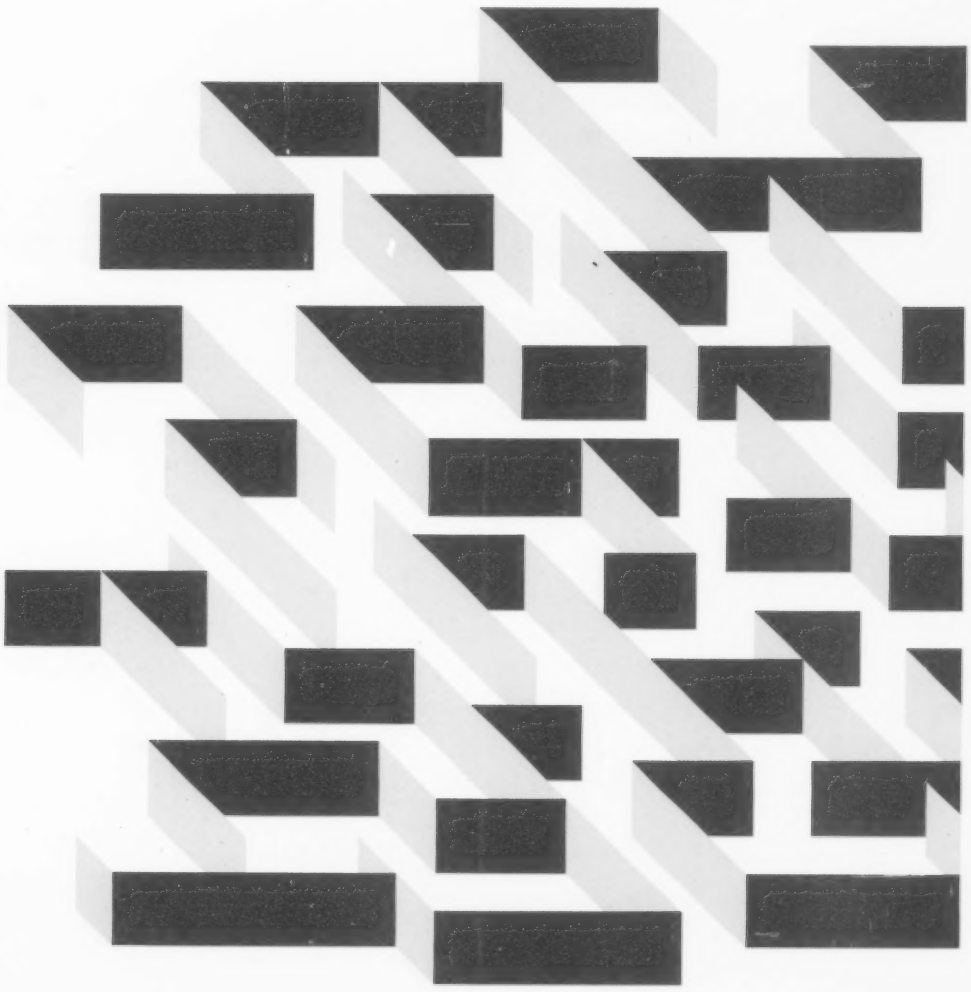

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